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ABSTRACT

Recently, research has begun to identify the social cognitive dysfunctions that aggressive children display. Using noninteractive laboratory tasks, aggressive children were found to perceive more hostile intentions from others in ambiguous situations than did nonaggressive children. Research has not investigated if this bias occurs in truly interactive settings. This study hypothesizes that aggressive boys and nonaggresive boys will have differences in their absolute perceptions of their own and their peer partners' aggressiveness, and in their attributions for relative responsibility for aggression in actual social interactions. Aggressive (n=20) and nonaggressive (n=18) boys were selected from fourth and fifth grades at four elementary schools. Aggressive and nonaggressive behavior was identified by their teachers. Results indicated that aggressive boys did display different attributional processes about perceived aggression than did nonaggressive boys in actual social interactions. Perhaps the most notable finding involved the differential ways, in opposite status pairs, in which aggressive boys attributed relatively greater aggression to their peer partner than to themselves, while nonaggressive boys displayed the opposite pattern by perceiving themselves as being more aggressive than their partners. Aggressive boys' awareness of their own behavior may be enhanced in an intervention by using a role-playing procedure which incorporates their own and peers' behavior. (ABL)

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Self and Peer Perceptions and Attributional Biases of Aggressive and Nonaggressive Boys in Dyadic Interactions

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Based on evidence that childhood aggression is a major risk factor for later violence, and antisocial difficulties (Achenbach, 1982; Olweus, 1979; Robins, 1978), and based on the immediate problematic effects of a child's aggressive behavior towards peers and adults, increased emphasis has been placed on identifying factors which potentially mediate children's anger arousal. In recent years, research has begun to identify the social cognitive dysfunctions that aggressive children display. One element of cognitive processing which has received particular attention involves the child's attributions or appraisals of the social stimuli they encounter. Using noninteractive laboratory tasks, such as responding to hypothetical stories of social interactions and to photographs, Dodge (1980) and Nasby, Hayden and DePaulo (1980) found aggressive children to perceive more hostile intentions from others in ambiguous situations than do nonaggressive children. The presence of this bias has now been replicated by Dodge and his colleagues in subsequent samples of children and adolescents with the noninteraction tasks (Dodge & Newman, 1981; Milich & Dodge, 1984), and with a more realistic laboratory setting where subjects observed through a one-way mirror that peers had knocked down block towers the subjects had made (Steinberg & Dodge, 1983).

However, research has not yet investigated whether these biases occur in truly interactive social settings. In addition, the contextual variables which stimulate the bias have not been fully elaborated despite

conclusions that cognitive appraisals may vary under different specific conditions (Lazarus & Folkman, 1984). Steinberg and Dodge (1983) investigated one contextual variable and found that children's attributions of peers were not affected by the degree of their familiarity with the peers. However, the effect of other important situational variables, such as the peers' prior aggressive status, have not been examined. Of even greater importance, while research has focused on that part of the attributional bias involving distortions in perceptions of others' intentions, distortions in self perceptions and in attributions of relative responsibility for aggression have not been examined.

Appraisals or schemas are made of oneself as well as one's partner in social interactions (Fiske & Taylor, 1984). The difference between self and partner perceptions can indicate the relative responsibility ascribed to each dyadic partner for particular interactive behaviors. Attributions of responsibility in dyadic problem-solving situations involve implicit and explicit assigning of relative credit or blame for an action (Fiske & Taylor, 1984).

The current study will address these gaps in the research, and hypothesizes that aggressive boys and nonaggressive boys will have differences in their absolute perceptions of their own and their peer partners' aggressiveness, and in their attributions for relative responsibility for aggression in actual social interactions. These perceptions will be examined within dyads of same behavioral status and cross behavioral status boys, to assess situational effects on these

processes. This study will also assess two secondary objectives determining whether boys' perceptual deficiencies relate to their immediately subsequent behavior, and of whether boys' perceptual deficiencies predict their responsiveness to cognitive behavioral treatment.

Method and Results

Twenty aggressive boys and 18 nonaggressive boys were selected from the fourth and fifth grades at four elementary schools. Teachers were asked to identify the boys in their classes who had difficulty controlling their anger, and who were the most verbally and physically aggressive and disruptive boys in their classes. The Aggressive group consisted of boys who had the highest scores on the Aggression subscale of the Missouri Children's Behavior Checklist (MCBC: Sines, Pauker, Sines & Owen, 1969) completed by teachers. The Nonaggressive group consisted of boys who were identified by teachers as not displaying aggressive difficulties. The Aggressive group had an average age of 10 years 3 months, and 50 percent of the subjects in this group were black. The Nonaggressive group had an average age of 10 years 6 months, and 22 percent of this group was black. Verbal I.Q. scores from the Cognitive Abilities Test were available for 33 of the subjects, and the Aggressive group had a mean Verbal I.Q. of 103 ($\underline{N}$ = 17), and the Nonaggressive group had a mean Verbal I.Q. of 112 ($\underline{N}$ = 16). Although the Nonaggressive group had a higher percentage of white children and higher Verbal I.Q. scores, these differences were not statistically significant.

Measures of boys' behavioral and perceived competence characteristics were collected during the second month of the school year, and included ratings by independent observers of boys on task classroom behavior (Behavior Observation Schedule for Pupils and Teachers, BOSPT: Breyer & Calchera, 1971), teacher and parent MCBC ratings of boys' aggressiveness, and boys' self report of their perceived competence and self esteem (Perceived Competence Scale for Children, PCSC: Harter, 1982).

After these data had been gathered, the subjects participated in a dyadic interaction task at their school, with five of the pairs of subjects having two aggressive subjects, four of the pairs having two nonaggressive subjects, and 10 of the pairs having one aggressive and one nonaggressive subject. The 38 subjects in these 19 pairs were assigned to one of four experimental cells. Thus, 10 subjects were assigned to the Aggressive Subject with Similar Status Peer cell (AS), eight subjects were in the Nonaggressive Subject with Similar Status Peer cell (NS), 10 subjects were in the Aggressive Subject with Opposite Status Peer cell (AO), and 10 of the subjects were in the Nonaggressive Subject with Opposite Status Peer cell (NO). The AO cell contained only the data from aggressive subjects in the opposite status pairs and not their nonaggressive partners, while the NO cell contained only the data from nonaggressive subjects from the same pairs. The two subjects in each dyad came to the task from different classrooms in the same school.

Comparability checks found that aggressive and nonaggressive subjects were actually behaviorally and subjectively different subgroups of boys, and that the assignment of subjects to cells had resulted as anticipated in similar subsamples within the Aggressive subject - Same status peer (AS) and Aggressive subject - Opposite status peer (AO)

cells, and within the Nonaggressive subject - Same status peer (NS) and Nonaggressive subject - Opposite status peer (NO) cells. The means of behavioral and subjective characteristics for subjects in the four cells can be found in Table 1, and two-way analyses of variance were computed with these variables. The analyses of variance used independent variables of subjects' Status (Aggressive, Nonaggressive) and of Similarity of Peers' Status (Similar, Opposite), and yielded main effects for status that indicated that aggressive subjects had lower rates of on task behavior, higher rates of passive off task and disruptive-aggressive off task behavior, higher teacher ratings of aggression and poorer self esteem. Planned contrasts within same status dyads (AS vs NS) and opposite status dyads (AO vs NO) supported the ANOVA results.

This study's interaction task paradigm was based on a dyadic conflict task which had been successfully used in a prior study of partners' interpersonal perceptions (Lochman & Allen, 1979, 1981). The subjects in each dyad were taken to separate areas and were read a vignette about two boys who accidentally bumped into each other in a school hallway. The vignette ended with two boys engaging in a verbally and physically aggressive interchange. The research assistant then wrote down the subject's responses to questions about the conflict, inquiring about the subject's perceptions of what the problem was for one of the vignette characters, who caused the problem, how the problem could have been resolved, and what the boys were thinking and feeling during the story. One subject in each dyad was asked to think about the

problem from the perspective of one vignette character, while the other subject was asked to respond from the other character's perspective.

When the subjects were brought together they were instructed to jointly discuss their answers to the questions about the story for four minutes. They were told they would probably disagree about their answers, they should try to reach a team decision if they could, but that this was a task mainly to see which of them wins, so they should stand up for their opinion. The research assistants started the videotape equipment which was in the room, and then both research assistants left the room. The subjects were again taken to separate areas by the research assistants after the end of the discussion, and the subjects indicated their perceptions of themselves and their partner on the Rating Form with instructions to only rate their current interaction. Finally, the subjects were brought back together for a second four-minute discussion about another peer conflict vignette.

Following the interaction, subjects rated their partners and themselves with seven semantic differential items, using a six point rating scale between the adjectives. Two blind research assistants later rated each subject in the videotaped interactions with the Rating Form items, and their ratings were averaged. A separate factor analysis, using a varimax rotation, was computed on the Rating Form items from each rating source (subject, peer and research assistants), and these results are summarized in Table 2. Since comparison scores were going to be derived by finding the differences between rating sources' data, it was important to identify common factors that emerged across the

three analyses. As the factor analysis results indicate, a Verbal Dominance factor with two items (Talkative-Silent; Strong-Weak) was clearly evident in all three analyses, and an Aggression factor with two items (Aggressive-Likable; Cruel-Kind) was clearly evident in two analyses and moderately evident in the third analysis which involved subjects' self ratings. The other three semantic differential items did not load consistently on one factor, and hence were not used in subsequent analyses. In general, the Aggression and Verbal Dominance factors were concluded to be commonly constructed across the three rating sources. Interrater agreement was calculated for these two factors, yielding agreement rates of 81% for Verbal Dominance, and 74% for Aggression.

Using these factors for Aggression and Verbal Dominance, three variables assessing subjects' perceptions and attributions were derived for each factor. Peer Perceptual Difference was computed by subtracting the average research assistant rating of a subject's peer partner on a particular factor from the subject's rating of the same peer on the same factor. Self Perceptual Difference was computed by subtracting the research assistant's rating of the subject from the subject's self rating. For both of these variables, the more negative the score, the more the subjects underestimated their peers' or their own level of the behavior. The subtraction of the research assistant rating controls for the actual level of the behavior, and yielded a clear measure of deviation which is independent of dyadic behavior. The third variable, Relative Responsibility, was computed by subtracting Self Perceptual Difference scores from Peer Perceptual Difference scores. When this

score was positive, subjects erroneously attributed more of the specific behavior to their partners than to themselves, and when the score was negative, subjects erroneously attributed more responsibility to themselves. When the score was near zero, the subject's rating of relative differences between himself and his peer on a factor was congruent with the research assistants' rating of the relative differences between the dyadic partners.

It was anticipated that there would be little actual variability in aggressive behavior between cells during the interaction task, since expected behavioral differences between groups of children have been found to emerge only after extended contact in research settings (e.g., Coie & Kupersmidt, 1983). The means of the research assistant ratings of subjects in the four cells are presented in Table 3. The results of the two-way analyses of variance and of planned comparisons support this assumption that aggressive behavior would be similar for the four cells.

Table 3 also provides the means of the perceptual ratings that subjects made of their partners and of themselves. The means of the Distortion and Responsibility scores can be found in Table 4. Two-way analyses of variance yielded significant main Status effects for Self Perceptual Difference scores on Aggression ratings, $F(1, 34) = 4.7$, $p < .04$, and for Relative Responsibility for Aggression, $F(1, 34) = 5.6$, $p < .03$. In addition there was a trend for an interaction effect on Relative Responsibility for Aggression, $F(1, 34) = 3.0$, $p < .09$. There were no other significant main or interaction effects for the Aggression or the Verbal Dominance dependent variables.

The two sets of a priori planned comparisons (Myers, 1972) between cells tested differences between (1) the aggressive and nonaggressive subjects interacting with similar status peers (AS vs NS), and (2) the aggressive and nonaggressive subjects interacting with opposite status peers (AO vs NO) using t-tests, and can be found in Table 3. To avoid chance findings with the planned comparisons, a two-tailed Bonferroni procedure was used to adjust the significance level for the effect of multiple comparisons. The AO cell had lower Self Perceptual Difference scores for aggression, and higher Attribution of Relative Responsibility for aggression than did the NO cell. In the opposite status dyads, the aggressive subjects primarily underestimated their own level of aggressiveness while the nonaggressive subjects underestimated their peers' aggressiveness. The other planned contrasts for the cells AO vs NO, and for the other dependent variable of Peer Perceptual Difference for aggression did not produce significant findings. To insure that these significant results were not due to uncontrolled variables such as racial status, analyses of covariance, covarying out the effects of race, were computed between groups, and produced results similar to the planned comparison t-tests.

To determine if boys' significant perceptual deficiencies during the initial interaction were related to their subsequent increases in aggressive behavior in the second interaction, Pearson correlation coefficients were computed between the Self Perceptual Difference and Relative Responsibility measures and the Aggression Difference score. The Aggression Difference score was calculated by subtracting the research assistants aggression rating for the first interaction from the second interaction. These results can be found in Table 5, and

indicate that when subjects underestimate their own aggressiveness, they tend to emit more subsequent aggression if they were in the opposite status dyads, and significantly emit more aggression in the same status dyads. The latter significant finding is unexpected, since the perceptual difference scores in the same status dyads were not found to be validly related to boys' behavioral status.

As an exploratory analysis which must be considered cautiously because of the very small sample sizes, the significant perceptual deficiency scores were correlated with aggressive subjects behavioral and self esteem change scores following their involvement in a cognitive behavioral intervention. The nonaggressive subjects were not included in these analyses. The school-based Anger Coping intervention consists of 18 weekly group sessions, with each session lasting 45 to 60 minutes. The AC intervention focuses on: (a) establishing group rules and contingent reinforcements; (b) using self-statements to inhibit impulsive behavior; (c) identifying problems and social perspective-taking with pictured and actual social problem situations; (d) generating alternative solutions and considering the consequences of alternative solutions to social problems; (e) modeling videotapes of children becoming aware of physiological arousal when angry, using self-statements ("Stop! Think! What should I do?"), and using the complete set of problem-solving skills with social problems; (f) the boys planning and making their own videotape of inhibitory self-statements and social problem solving with a problem of their own choice; and (g) dialoguing, discussion, and role playing to implement social problem-solving skills with children's current anger arousal problems. Prior research had found that the Anger Coping intervention produces significant reductions in off task classroom behavior, and in

parents' ratings of boys' aggressiveness, and increases in self-esteem (Lochman, 1985; Lochman, Burch, Curry & Lampron, 1984; Lochman, Nelson & Sims, 1981). Following their participation in the dyadic interaction task, the 20 aggressive subjects received one of two versions of the Anger Coping Program, with one version emphasizing problem-solving skill training, and the second version emphasizing more self-instruction training skills. Across both versions of the program, subjects had significant increases in classroom on task behavior, and no change on teachers' ratings of aggression (Lochman & Curry, 1986), while other dependent measures were differentially affected by the two interventions. Table 6 indicates the Pearson correlation coefficients between subjects' perceptual deficiencies and their subsequent changes on two behavioral outcome measures. Aggressive boys who initially most underestimated their own level of aggressiveness made the greatest reductions in teachers' ratings of aggression.

Discussion

These results indicate that aggressive boys do display different attributional processes about perceived aggression than do nonaggressive boys in actual social interactions. Contextual effects on attributions are evident, since deviations are most likely to occur when a boy interacts with another boy who has a different behavioral status, and is typically much more aggressive or nonaggressive than he himself is, even though the current behavior of both boys may be very similar. An anticipated, these differences were apparent in perceptions of aggression but not in perceptions of verbal dominance, thus enhancing the validity of the aggression distortions. Perhaps the most notable finding involved the

differntial ways in opposite status pairs in which aggressive boys attribute relatively greater aggression to their peer partner than to themselves, while nonaggressive boys display the opposite pattern by perceiving they were more aggressive than their partners.

This pattern has important heuristic and clinical implications, since it suggests that nonaggressive boys tend to assume greater responsibility for aggression in early stages of a conflict, and this attribution of greater self-blame may motivate their efforts to modulate their expression of hostility. Metalsky and Abramson (1981) have suggested that perceptions of self-blame can lead an individual to take concrete steps to adaptively alter a situation. In contrast, perceptions of other-blame may lead to less restrained control of aggresion impulses. The current study provides some tentative support for this view since boys who most minimized their perceptions of their own aggressiveness were most likely to increase their level of aggression during a second, subsequent interaction.

To adequately understand how appraisal processes operate in interpersonal situations, research should address how recursive sequences of cognitive appraisal of behavior produce progressive changes of behavior during an interaction. During an initial behavior exchange in a situation, aggressive boys can begin to place the responsibility for any conflict or disagreement on a peer, thus justifying subsequent aggression towards the blamed peer, if the conflict escalates. These initial attributions of responsibility are of behavior in that immediate situation, such as the initial stages of a disagreement, and are not perceptions of peer or self aggressiveness in general. However, the

general perceptions and expectations may influence a boy's situational perceptions by providing a comparison level to contrast with the situational perceptions. Further research with larger samples can determine the effect of children's expectations on their perceptual distortions, attributions, and behavior and the complex interplay between children's cognitive appraisals, physiological arousal and behavior during escalating conflicts.

In summary, aggressive boys have been found to have perceptual and attributional biases of their own and their peers' level of aggression and assessment of relative differences in both self and peer perceptions may be particularly meaningful. These perceptual deviations are part of a network of social cognitive processes including social problem-solving skills (Deluty, 1981; Lochman & Lampron, in press; Richard & Dodge, 1982), which appear to mediate children's expression of anger, and which have clinical implications for cognitive-behavioral treatment of aggressive boys (Forman, 1980; Kettlewell & Kausch, 1983;Lochman, 1985; Lochman, Burch, Curry & Lampron, 1984; Lochman & Curry, in press; Lochman, Lampron, Burch & Curry, 1985; Lochman, Nelson & Sims, 1981). Thus, in addition to focusing on social problem-solving dysfunctions, these interventions can focus on reframing aggressive boys' perceptions of their own and their peers' aggressiveness. Such changes would necessarily occur slowly, since these perceptual distortions are deeply ingrained. Aggressive boys" awareness of their own behavior may be enhanced in an intervention by using a role-playing procedure similar to this study's interaction task, incorporating boys' ratings of their own and peers' behavior. Finally, as this study's suggestive findings indicate, boys' levels of perceptual distortions may be predictive of their response to cognitive behavioral interventions, with boys who have greatest distortions potentially benefitting most.

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Author Notes

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Table 1

Means and t- Values for Behavior and Perceived Competence Variables of Subjects Assigned to the Four Experimental Cells

	Cells								Cell Contrasts			
	AS		NS		AO		NO					
Variables	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	AS vs NS	AO vs NO	AS vs AO	NS vs NO
BOSPT												
On Task	71	22	93	5	66	22	92	4	2.8**	3.8**	0.7	0.1
Passive Off Task	24	19	5	4	27	18	5	3	3.0**	3.7**	0.5	0.1
Disruptive-Aggressive Off Task	5	5	3	2	7	6	2	2	1.0	2.4*	0.9	0.4
Teachers' MCBC												
Aggression Scale	9.4	4.1	0.6	1.8	8.8	3.5	0.0	0.0	6.5***	6.9***	0.5	0.5
PCSC												
Cognitive	2.9	0.5	2.6	0.4	2.8	0.7	2.8	0.4	1.2	0.4	0.7	0.9
Social	2.7	0.9	3.0	0.5	2.7	0.5	3.0	0.4	1.0	1.1	0.0	0.1
Physical	3.1	0.8	2.8	0.4	3.0	0.7	2.9	0.7	1.0	0.6	0.2	0.3
Self Esteem	2.7	0.6	3.2	0.7	2.6	0.5	3.1	0.3	2.0*	2.0*	0.4	0.5

[a] N equals 10 for AS 8 for NS 10 for AO and 10 for NO

* $p < .05$

** $p < .01$

*** $p < .001$

Table 2

Factor Analysis of Semantic Differential Ratings

Using Varimax Rotation

	Initial Items Loading on Each Factor		
Rating Source	Factor 1	Factor 2	Factor 3
Subject Rating of Self	Talkative (.79)[a]	Cruel (.96)	Powerful (.79)
	Strong (.77)	Aggressive (.30)	Successful (.68)
Eigenvalue	2.21	1.05	1.46
Percent of Variance	32	15	21
Subject Ratings of Peer	Talkative (.81)	Aggressive (.87)	Wise (.89)
	Strong (.73)	Cruel (.86)	Powerful (.65)
Eigenvalue	2.06	1.80	1.09
Percent of Variance	29	26	16
Research Assistant Rating	Strong (.90)	Successful (-.79)	
of Subject	Talkative (.86)	Aggressive (.77)	
	Powerful (.82)	Cruel (.70)	
Eigenvalue	2.74	1.94	
Percent of Variance	39	28	

[a]Loading of item on the factor. N = 38.

Table 3

Means and t-test Values for Ratings of Behavior During the Interaction Task

Variable	Cells								t-test Planned Comparisons[a]	
	AS		NS		AO		NO		AS vs NS	AO vs NO
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD		
Research Assistant Rating										
Aggression	5.2	1.0	5.3	0.6	5.1	0.5	5.0	0.5	0.3	0.3
Verbal Dominance	9.6	1.0	8.8	0.9	7.8	1.2	8.0	1.4	1.5	0.5
Subjects' Self Rating										
Aggression	3.1	1.6	3.6	1.4	3.1	1.4	4.8	1.3	0.7	2.8*
Verbal Dominance	10.6	1.8	9.6	2.1	8.5	2.7	8.3	1.6	0.9	1.0
Subjects' Rating of Peer										
Aggression	3.2	1.4	3.4	1.7	4.3	3.6	3.5	1.2	0.2	0.7
Verbal Dominance	10.1	2.0	10.0	1.5	9.3	1.4	8.7	1.9	0.1	0.8

[a] A two-tailed multistage Bonferroni procedure was used to obtain the significance level. $\alpha_{FW} = .10$ is the familywise Type I error rate; α_T is the Type I error rate per test. N was 18 for AS vs NS, and 20 for AO vs NO.

* $p_{FW} < .10$; $p_T < .017$

Table 4

Means and t-test Values for Distortion and Attribution Scores

Variable	Cells								t-test Planned Comparisons[a]	
	AS		NS		AO		NO		AS vs NS	AO vs NO
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD		
Aggression										
Self Distortion	-2.1	2.2	-1.6	1.4	-2.0	1.2	-0.2	1.6	0.5	2.5*
Peer Distortion	-2.0	1.9	-1.9	1.7	-0.7	3.5	-1.6	1.0	0.1	0.9
Relative Responsibility	0.1	1.9	-0.3	0.8	1.3	3.3	-1.4	1.1	0.4	2.9*
Verbal Dominance										
Self Distortion	1.0	2.0	0.9	2.0	0.8	2.9	0.3	1.9	0.1	0.5
Peer Distortion	-4.5	1.7	-4.5	1.4	-4.7	1.5	-5.4	1.9	0.0	0.9
Relative Responsibility	-5.5	2.5	-5.4	1.2	-5.5	3.2	-5.7	1.7	0.1	0.2

[a] A two-tailed multistage Bonferroni was used to obtain the significance level. $\alpha_{fw} = .10$ is the familywise Type I error rate; α_T is the Type I error rate per test. N was 18 for AS vs NS, and 20 for AO vs NO.

* $p_{fw} < .10$; $p_T < .017$.

Table 5

Pearson Correlation Coefficients between Research Assistants' Ratings of Increased Aggression During the Second Interaction and Subjects' Prior Perceptual Deficiencies

	Opposite Status Dyads (N = 20)	Same Status Dyads (N = 18)
Self Perceptual Difference	-.40+	-.48*
Relative Responsibility	-.01	.06

+ $p < .08$

* $p < .05$

Table 6

Pearson Correlation Coefficients between Subjects Prior Perceptual Deficiencies and their Behavioral Changes Following Cognitive Behavioral Treatment

	Aggressive Subjects with Opposite Status Partners (N = 10)		Aggressive Subjects with Same Status Partners (N = 10)	
	On Task Change	Aggression Rating Change	On Task Change	Aggression Rating Change
Self Perceptual Difference	.10	.66*	-.09	.35
Relative Responsibility	.13	.16	.23	-.40

*$p < .04$